HANDY INSECT-VECTOR CAGE

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During the past year a small insect-vector cage, having some advantages over cages previously described for use in plant virus transmissions, was developed. It was based on the principle described by Sikora (6) and later perfected by Weigl (7) in experiments with typhus transmitted by lice feeding through a screen. The cage was made of celluloid, like one recently described by Costa and Bennett (1) as a modification of a cage developed by Giddings (2). It employed a binder clip for suspension, like cages used by Hutchinson (3).

The cage (Fig. 1) was made from pieces of translucent Lusteroid centrifuge tubes of desired diameter and cut by a circular saw to a suitable length. One piece was cut lengthwise and glued with acetone along the cut edges so as to fit telescopically into the other one. Holes were cut with a paper punch in both parts, the end of the outer tube being covered with a round piece of screen, fixed with Duco cement. It was found (5) that a plastic screen of Lumite (produced by the Chicopee Manufacturing Corporation) allowed greater light transmission than cheesecloth or wire, was acid resistant and would not corrode. A mesh 60×60 per inch, woven from 0.005″ diameter translucent amber-colored saran monofilament, was small enough to prevent the escape of the smallest insects used in the experiments and still allowed their feeding through the screen. Two strips of cellulose nitrate, 0.02″ in thickness, were connected with a shoe eyelet at one end. Cellulose nitrate was used exclusively because cellulose acetate proved toxic for plants (4). In the upper strip a hole was cut of a diameter somewhat smaller than that of the tubing used, and covered from below with a circular piece of Lumite screen, fastened tightly with Duco cement. The lower strip was made slightly longer than the upper to simplify manipulation of the cage. The shoe eyelet connection permitted the scissor-like opening of the two parts, between which the leaf to be exposed was inserted. It also proved useful in suspending the cage on a piece of heavy wire, bent at one end, and in facilitating the cleaning of the screen.

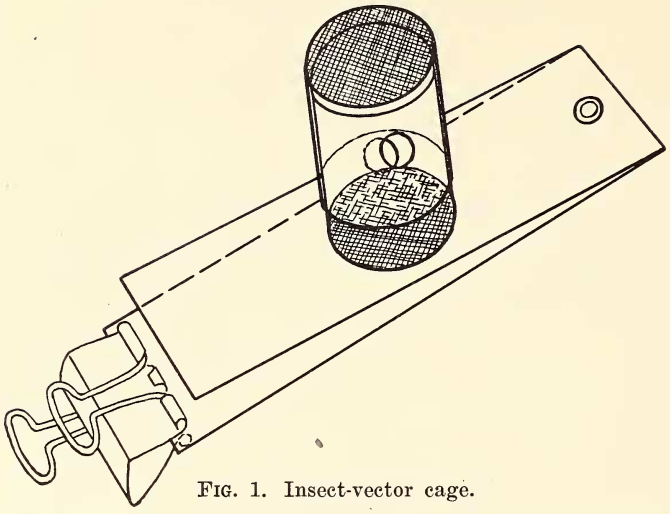

FIG. 1. Insect-vector cage.

At the opposite end the two celluloid strips were clamped together by a binder clip No. 2 to hold the cage in place on a leaf. Smaller cages adhered adequately to a leaf without a clip. After insects were inserted through the matching holes, the outer part was turned, thus closing the cage. The device permitted rapid transfer of insects from plant to plant without the necessity of catching or harming them in any way. The smallest cage, used without a clip, weighed 1.5 g (diameter 1.2 cm, height 1.8 cm); the largest (2.7 cm × 3.5 cm) weighed 11 g, clip included. For permanent numbering of cages India ink was used. Numbers were covered with a celluloid-acetone glue to prevent smearing.

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